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10/584,290

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EXAMINER

SARWAR, BABAR

ART UNIT

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2617

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/584,290 | Applicant(s) AXELSSON ET AL. | |
| | Examiner BABAR SARWAR | Art Unit 2617 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "said infrastructure nodes" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Claim 1 recites the limitation "said link quality information" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-48 are rejected under 35 U.S.C. 102(b) as being anticipated by Redi et al. (US 2002/0071395 A1), hereinafter referenced as Redi.

Consider **Claims 1, 17, 31, 45-48**, Redi discloses a system for efficient routing in a multiple hop wireless communication network comprising a plurality of network nodes (**Fig. 6**). Redi further discloses means for acquiring quality information indicating link

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status between said infrastructure nodes (**Para 0017, where Redi discloses determining path loss by evaluating power data corresponding to a message received from the first node, therefore acquiring quality information indicating link status**); means for using said link quality information in a route determination process in the infrastructure nodes using a predictive procedure (**Para 0017, where Redi discloses determining network routing paths based on power loss information and routing messages to the network, therefore using link quality information in a route determination process**); said link quality information containing information about a time varying information of said link status (**Para 0046, where Redi discloses determining energy attenuation data/path loss data for messages transmitted over the links i.e. delays at nodes, congestion through nodes, disruption of signals, and interference, therefore time varying information**); and said predictive procedure uses said time varying information of link status in the predictive procedure; and routing means for routing data packets according to a determined route (**Para 0017, 0018, 0068, Fig. 6, where Redi discloses routing the messages to the network using link quality information**).

Consider **claim 2**, Redi discloses everything claimed as implemented above (see claim 1). In addition, Redi discloses that said wireless communication is a transmission system based on electromagnetic radiation with a frequency in the range of 100 kHz to 100 PHz (**Para 0062**).

Consider **claim 3**, Redi discloses everything claimed as implemented above (see claim 2). In addition, Redi discloses that said transmission system is one or several of

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IEEE 802.11, IEEE 802.15, IEEE 802.16, HiperLAN, HomeRF, Bluetooth, IR, UWB, JTRS, 3G, GPRS, or EDGE (**Fig. 1, where Redi discloses an Ad-Hoc network**).

Consider **claim 4**, Redi discloses everything claimed as implemented above (see claim 1). In addition, Redi discloses that the system comprises a reactive ad hoc routing protocol (**Para 0003**).

Consider **claim 5**, Redi discloses everything claimed as implemented above (see claim 1). In addition, Redi discloses that the system comprises a proactive ad hoc routing protocol (**Para 0003**).

Consider **claim 6**, Redi discloses everything claimed as implemented above (see claim 1). In addition, Redi discloses that the system comprises a combination of reactive and proactive ad hoc routing protocols (**Para 0003**).

Consider **claim 7**, Redi discloses everything claimed as implemented above (see claim 1). In addition, Redi discloses that the link status information is radio channel status information given by measurement of at least one of Doppler spread, coherence time, average fading duration, signal strength, or signal to interference noise ratio (**Para 0044**).

Consider **claim 8**, Redi discloses everything claimed as implemented above (see claim 1). In addition, Redi discloses that the predictive procedure for an ad hoc routing protocol uses obtained link status information and radio channel information in a comparison with determined routing anticipation criteria (**Para 0018, where Redi discloses routing messages to the network based on link quality information i.e. routing criteria**).

Consider **claim 9**, Redi discloses everything claimed as implemented above (see claim 4). In addition, Redi discloses that the predictive model for said reactive ad hoc routing protocol obtains information about link status and a radio channel status from modified RREP, Hello messages, Acknowledgements, or RERR messages (**Fig. 6**).

Consider **claim 10**, Redi discloses everything claimed as implemented above (see claim 5). In addition, Redi discloses that the predictive model for said proactive ad hoc routing protocol comprises a modified routing table containing a route status field with information about a link status (**Para 0040**).

Consider **claim 11**, Redi discloses everything claimed as implemented above (see claim 1). In addition, Redi discloses that the link status information comprises energy status of nodes in the network (**Para 0018**).

Consider **claim 12**, Redi discloses everything claimed as implemented above (see claim 1). In addition, Redi discloses that the said link status information comprises number of NACK or ACK signals between nodes in the network (**Fig. 6**).

Consider **claim 13**, Redi discloses everything claimed as implemented above (see claim 1). In addition, Redi discloses that the link status information comprises number of bit errors in a communication between nodes in the network (**Para 0048**).

Consider **claim 14**, Redi discloses everything claimed as implemented above (see claim 1). In addition, Redi discloses that the link status information comprises information about ownership of nodes in the network (**Para 0003**).

Consider **claim 15**, Redi discloses everything claimed as implemented above

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(see claim 1). In addition, Redi discloses that a routing protocol used in the system
(Para 0003).

Consider **claim 16**, Redi discloses everything claimed as implemented above
(see claim 15). In addition, Redi discloses that the protocol being one of a proactive ad
hoc routing protocol, reactive ad hoc routing protocol, or a combination of a proactive
and reactive ad hoc routing protocol **(Para 0003).**

Claim 18, as analyzed with respect to the limitations as discussed in claim 4.

Claim 19, as analyzed with respect to the limitations as discussed in claim 5.

Claim 20, as analyzed with respect to the limitations as discussed in claim 6.

Claim 21, as analyzed with respect to the limitations as discussed in claim 7.

Claim 22, as analyzed with respect to the limitations as discussed in claim 8.

Claim 23, as analyzed with respect to the limitations as discussed in claim 9.

Claim 24, as analyzed with respect to the limitations as discussed in claim 10.

Claim 25, as analyzed with respect to the limitations as discussed in claim 11.

Claim 26, as analyzed with respect to the limitations as discussed in claim 12.

Claim 27, as analyzed with respect to the limitations as discussed in claim 13.

Claim 28, as analyzed with respect to the limitations as discussed in claim 14.

Claim 29, as analyzed with respect to the limitations as discussed in claim 2.

Claim 30, as analyzed with respect to the limitations as discussed in claim 3.

Claim 32, as analyzed with respect to the limitations as discussed in claim 2.

Claim 33, as analyzed with respect to the limitations as discussed in claim 3.

Claim 34, as analyzed with respect to the limitations as discussed in claim 4.

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Claim 35, as analyzed with respect to the limitations as discussed in claim 5.

Claim 36, as analyzed with respect to the limitations as discussed in claim 6.

Claim 37, as analyzed with respect to the limitations as discussed in claim 7.

Claim 38, as analyzed with respect to the limitations as discussed in claim 8.

Claim 39, as analyzed with respect to the limitations as discussed in claim 9.

Claim 40, as analyzed with respect to the limitations as discussed in claim 10.

Claim 41, as analyzed with respect to the limitations as discussed in claim 11.

Claim 42, as analyzed with respect to the limitations as discussed in claim 12.

Claim 43, as analyzed with respect to the limitations as discussed in claim 13.

Claim 44, as analyzed with respect to the limitations as discussed in claim 14.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 46, 47 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. **Claims 46, 47** define a **computer program** embodying functional descriptive material. However, the claims do not define a computer-readable medium or computer-readable memory and are thus non-statutory for that reason.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BABAR SARWAR whose telephone number is

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(571)270-5584. The examiner can normally be reached on MONDAY TO FRIDAY
09:00 A.M -05:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NICK CORSARO can be reached on (571)272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BS/

/BABAR SARWAR/
Examiner, Art Unit 2617

/NICK CORSARO/

Supervisory Patent Examiner, Art Unit 2617